WE CLAIM:

1. A particle with an optically recognizable code comprising a substrate, part of which has light polarizing properties in accordance with a code pattern.

2. The particle of claim 1, wherein; at least, one side of the substrate is covered with, at least, one layer of a material with light polarizing properties; and a part of the substrate is cleared of the polarizing material in accordance with a code pattern.

3. The particle of claim 2, wherein the substrate is made of a material with low light absorption in the wavelength range used for coded particle detection.

4. The particle of claim 2, wherein the polarizing material is chosen with linear light polarization properties in the light wavelength range used for coded particle detection and low light absorption in the other light wavelength ranges.

5. The particle of claim 2, further comprising, at least, one cladding layer over the polarizing layer.

6. The particle of claim 2, further comprising a second layer of a material with polarizing properties.

7. The particle of claim 6, wherein the polarizing plane of the second polarizing layer is substantially perpendicular to the polarizing plane of the first polarizing layer.

8. The particle of claim 6, wherein a part of the substrate is cleared of the second polarizing layer.

9. The particle of claim 8, wherein the pattern of the second polarizing layer substantially coincides with the pattern of the first polarizing layer.

10. The particle of claim 6, further comprising a second cladding layer of material over the second polarizing layer.

11. The particle of claim 5, wherein the substrate thickness is in the range 0.01-1 mm, the polarizing layer thickness is in the range 0.1-100 microns, and the cladding layer thickness is in the range 1-300 microns.

12. A method of fabrication of a particle with optically recognizable code, comprising:

applying, at least, one layer of polarizing material on a substrate; and

patterning the polarizing layer(s) in accordance with a code pattern.

13. The method of claim 12, wherein the substrate material is chosen with low light absorption within the light wave range of polarization of the first polarizing material.

14. The method of claim 12, further comprising patterning the polarizing layer(s) by focused light (laser) with the light wavelength within the range of polarization of the polarizing material.

15. The method of claim 12, further comprising applying of, at least, one cladding layer over the polarizing layer(s).

16. The method of claim 12, further comprising:

fabricating a plurality of substrates as a continuous sheet of the substrate material;

applying, at least, one layer of polarizing material on the substrate sheet;

patterning the polarizing layer(s) of every substrate; and

singulating the substrates from each other.

17. The method of claim 16, further comprising applying at least one cladding layer before singulating the substrates.

18. The method of claim 12, further comprising:

forming the substrate(s) by application of a layer of substrate material on a plate before applying the first polarizing material; and

separating the substrate(s) from the plate after singulation.

19. The method of claim 18, further comprising singulating the substrate by a focused light (laser) with a wavelength that provides high light absorption by the substrate material and low light absorption by the plate material.

20. A method of fabrication of a particle with optically recognizable code, comprising patterning a substrate, made of a material with light polarizing properties, by means of localized modification of the substrate light polarizing properties in accordance with a code pattern.

21. The method of claim 20, wherein localized modification of the substrate light polarizing properties is made by localized substrate material removal.

22. The method of claim 20, wherein localized modification the substrate light polarizing properties is made by changing of polarization orientation and/or randomization and/or, at least partial, destruction of the light polarizing components of the substrate material.

23. The method of claim 20, further comprising:

fabricating a plurality of substrates as a continuous sheet of the substrate material;

locally modificating the light polarizing properties of the substrate in accordance with a code pattern for every substrate; and

singulating the substrates from each other.

24. A method of detection of a coded particle among a plurality of coded particles, randomly distributed on a surface, comprising:

acquiring at least two images of the surface with particles using transmitted linearly polarized light, wherein the light polarization plane during every image acquisition is substantially non-parallel to the light polarization plane during another image acquisition;

numerically combinating at least two images of the surface; and

performing image recognition of the particle code.

25. The method of claim 24, wherein the light polarization plane during every image acquisition is substantially perpendicular to the light polarization plane during another image acquisition.